

**CHARGE PUMP FOR A LOW-VOLTAGE WIDE-TUNING RANGE  
PHASE-LOCKED LOOP**

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**ABSTRACT**

A charge pump for a differential phase-locked loop (PLL) is provided. The charge pump includes a current switch configured to voltage to source and sink a current in a complementary fashion from a pair of differential output nodes. The  
10 charge pump includes a common-mode feedback loop to maintain the charging and discharging of the differential output nodes with respect to a common-mode voltage. Transconductance amplifiers are provided within the common-mode feedback loop to provide greater dynamic range to the charging and discharging of the differential output nodes.

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